

**WHAT IS CLAIMED IS:**

1. A method for allocating radio resources comprising the steps of:  
selecting a service quality requirement for a first service group and a  
second service group;  
5 determining an amount of radio resources for the first and second service  
groups to achieve the respective service quality requirement; and  
allocating the radio resources between the first and second service groups  
based on a difference between the determined amount of radio resources, wherein  
the radio resources are allocated per bearer within the first and second service  
10 groups.
2. The method of claim 1, wherein the determined amount of radio  
resources is a relative amount of radio resources between the first and second  
service groups.
3. The method of claim 1, wherein the determined amount of radio  
15 resources is an absolute amount of radio resources for the first and second service  
groups.

4. The method of claim 1, wherein said service quality is a function of user quality, within the service group.

5. The method of claim 4, further comprising the step of:  
compensating the amount of radio resources for the first and second service  
5 groups based upon a percentage of users of the first and second service groups  
which is desired to achieve the quality of service requirement,  
wherein the radio resources are allocated based upon the compensated  
amount of radio resource.

6. The method of claim 4, wherein the quality of service requirements  
10 is measured or estimated by carrier-to-interference ratios, bit error probability, bit  
error rate, frame erasure rate or block error rate.

7. The method of claim 5, wherein the compensation is based on the  
carrier-to-interference ratio standard deviation.

8. The method of claim 1, wherein the amount of radio resources is  
15 based on a power level used for the first and second service groups and the

difference between the determined amount of radio resources is a difference in power between the first and second service groups.

9. The method of claim 8, wherein the difference in power between the first and second service groups is applied to a fixed output power of the first service group.

10. The method of claim 8, wherein the difference in power between the first and second service groups is applied to a maximum power for the first service group.

11. The method of claim 8, wherein the difference in power between the first and second service groups is applied to an initial power for the first service group.

12. The method of claim 8, wherein the difference in power between the first and second service groups is applied to a fixed power, a maximum power and an initial power for the first service group.

13. The method of claim 8, further comprising the step of:

adjusting the power for individual users of a service group using individual power control loops.

14. The method of claim 8, wherein the amount of radio resource is

5 further based on the number of channels allocated to the first and second service group.

15. The method of claim 8, wherein the amount of radio resource is

further based on the scheduling to the first and second service group such that the amount of channel used by each service group is controlled by the scheduling.

16. The method of claim 1, wherein the selecting step and the

10 determining step are continuously performed to provide an updated allocation of radio resources.

17. The method of claim 5, wherein the percentage of users of the first

and second service groups who can achieve the quality of service requirement is  
15 measured and the amount of radio resources is adaptively compensated for based upon the updated percentage of users of the first and second service groups.

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18. The method of claim 1, wherein the selecting, determining and allocating steps are performed for the first service group, the second service group and a third service group.

19. A method of allocating radio resources for a first and second service group comprising the steps of:

determining an amount of radio resources at which the first service group can provide an minimum quality of service level;

determining an amount of radio resources allocated for the second service group; and

reallocating radio resources proportionally from the second service group to the first service group such that the service quality limits are simultaneously met.

20. The method of claim 19, wherein the radio resources are reallocated to maximize capacity.

21. The method of claim 19, further comprising the steps of:

determining an amount of radio resources at which a third service group can provide an minimum quality of service level;

determining an amount of radio resources allocated for a third service group; and

reallocating radio resources from the fourth service group to the third service group such that the total load between the first, second, third and fourth  
5 service groups is maximized.

22. The method of claim 19, wherein the radio resources are an output power for the first and second service groups.

23. The method of claim 22, wherein the radio resources are further a channel allocation for the first and second service groups.

10 24. The method of claim 22, wherein the output power for the first and second service groups is a per bearer output power for the first and second service groups.

25. The method of claim 22, wherein the output power is an initial power for the service group.

26. The method of claim 22, wherein the output power is a maximum power for the service group.

27. The method of claim 22, wherein the output power is a fixed power for the service group.

5 28. A method for allocating radio resources comprising the steps of:  
allocating a first transmit power per bearer for a first service group; and  
allocating a second transmit power per bearer for a second service group.

29. The method of claim 28, wherein the first and second transmit  
powers are allocated to a maximum or an initial output power per bearer for the  
10 first and second service groups.

30. The method of claim 28, wherein the first and second transmit  
powers are allocated based upon a measurement of bearer quality.

31. The method of claim 28, further comprising the step of:  
estimating a link quality, wherein the first and second transmit powers are  
15 allocated based upon the estimate.

32. The method of claim 28, wherein the first and second transmit powers are allocated to balance a quality of service between the first and second service groups.

5 33. The method of claim 28, wherein the first and second transmit powers are allocated based upon a desired fraction of satisfied users for each of the first and second service groups.

34. The method of claim 28, wherein the first and second transmit powers are repeatedly updated based upon estimates of quality for the first and second service groups.

10 35. The method of claim 28, wherein the first and second transmit powers are repeatedly updated based upon measurements of quality for the first and second service groups.



36. A radio communication system comprising:

means for selecting a service quality requirement for a first service group  
and a second service group;

means for determining an amount of radio resources for the first and second  
5 service groups to achieve the respective service quality requirement; and

means for allocating the radio resources between the first and second  
service groups based on a difference between the determined amount of radio  
resources, wherein the radio resources are allocated per bearer within the first and  
second service groups.

10 37. The system of claim 36, wherein the determined amount of radio  
resources is a relative amount of radio resources between the first and second  
service groups.

38. The system of claim 36, wherein the determined amount of radio  
resources is an absolute amount of radio resources for the first and second service  
15 groups.

39. The system of claim 36, wherein said service quality is a function of  
user quality, within the service group.

40. The system of claim 39, further comprising:

means for compensating the amount of radio resources for the first and second service groups based upon a percentage of users of the first and second service groups which is desired to achieve the quality of service requirement,

5 wherein the radio resources are allocated based upon the compensated amount of radio resource.

41. The system of claim 39, wherein the quality of service requirements is measured or estimated by carrier-to-interference ratios, bit error probability, bit error rate, frame erasure rate or block error rate.

10 42. The system of claim 40, wherein the compensation is based on the carrier-to-interference ratio standard deviation.

43. The system of claim 39, wherein the amount of radio resources is based on a power level used for the first and second service groups and the difference between the determined amount of radio resources is a difference in  
15 power between the first and second service groups.

44. The system of claim 43, wherein the difference in power between the first and second service groups is applied to a fixed output power of the first service group.

45. The system of claim 43, wherein the difference in power between  
5 the first and second service groups is applied to a maximum power for the first service group.

46. The system of claim 43, wherein the difference in power between the first and second service groups is applied to an initial power for the first service group.

10 47. The system of claim 43, wherein the difference in power between the first and second service groups is applied to a fixed power, a maximum power and an initial power for the first service group.

48. The system of claim 43, further comprising:  
means for adjusting the power for individual users of a service group using  
15 individual power control loops.

49. The system of claim 43, wherein the amount of radio resource is further based on the number of channels allocated to the first and second service group.

50. The system of claim 43, wherein the amount of radio resource is further based on the scheduling to the first and second service group such that the amount of channel used by each service group is controlled by the scheduling.

51. The system of claim 39, wherein the system provides an updated allocation of radio resources using the means for selecting and means for determining.

52. The system of claim 40, wherein the percentage of users of the first and second service groups who can achieve the quality of service requirement is measured and the amount of radio resources is adaptively compensated for based upon the updated percentage of users of the first and second service groups.

53. The system of claim 39, wherein the means for selecting, determining and allocating operate in connection with the first service group, the second service group and a third service group.

54. A radio communication system for allocating radio resources for a first and second service group comprising:

means for determining an amount of radio resources at which the first service group can provide an minimum quality of service level;

5 means for determining an amount of radio resources allocated for the second service group; and

means for reallocating radio resources proportionally from the second service group to the first service group such that the service quality limits are simultaneously met.

10 55. The system of claim 54, wherein the radio resources are reallocated to maximize capacity.

56. The system of claim 54, further comprising:

means for determining an amount of radio resources at which a third service group can provide an minimum quality of service level;

15 means for determining an amount of radio resources allocated for a third service group; and

means for reallocating radio resources from the fourth service group to the third service group such that the total load between the first, second, third and fourth service groups is maximized.

57. The system of claim 54, wherein the radio resources are an output  
5 power for the first and second service groups.

58. The system of claim 57, wherein the radio resources are further a channel allocation for the first and second service groups.

59. The system of claim 57, wherein the output power for the first and second service groups is a per bearer output power for the first and second service  
10 groups.

60. The system of claim 57, wherein the output power is an initial power for the service group.

61. The system of claim 57, wherein the output power is a maximum power for the service group.

62. The system of claim 57, wherein the output power is a fixed power for the service group.

63. A radio communication system for allocating radio resources comprising:

5 means for allocating a first transmit power per bearer for a first service group;

means for allocating a second transmit power per bearer for a second service group.

64. The system of claim 63, wherein the first and second transmit  
10 powers are allocated to a maximum or an initial output power per bearer for the first and second service groups.

65. The system of claim 63, wherein the first and second transmit powers are allocated based upon a measurement of bearer quality.

66. The system of claim 63, further comprising:  
15 means for estimating a link quality, wherein the first and second transmit powers are allocated based upon the estimate.

67. The system of claim 63, wherein the first and second transmit powers are allocated to balance a quality of service between the first and second service groups.

5 68. The system of claim 63, wherein the first and second transmit powers are allocated based upon a desired fraction of satisfied users for each of the first and second service groups.

69. The system of claim 63, wherein the first and second transmit powers are repeatedly updated based upon estimates of quality for the first and second service groups.

10 70. The system of claim 63, wherein the first and second transmit powers are repeatedly updated based upon measurements of quality for the first and second service groups.